

## Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



281.9  
76 Fmz  
Cop. 2

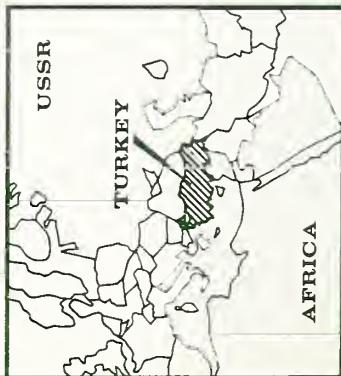
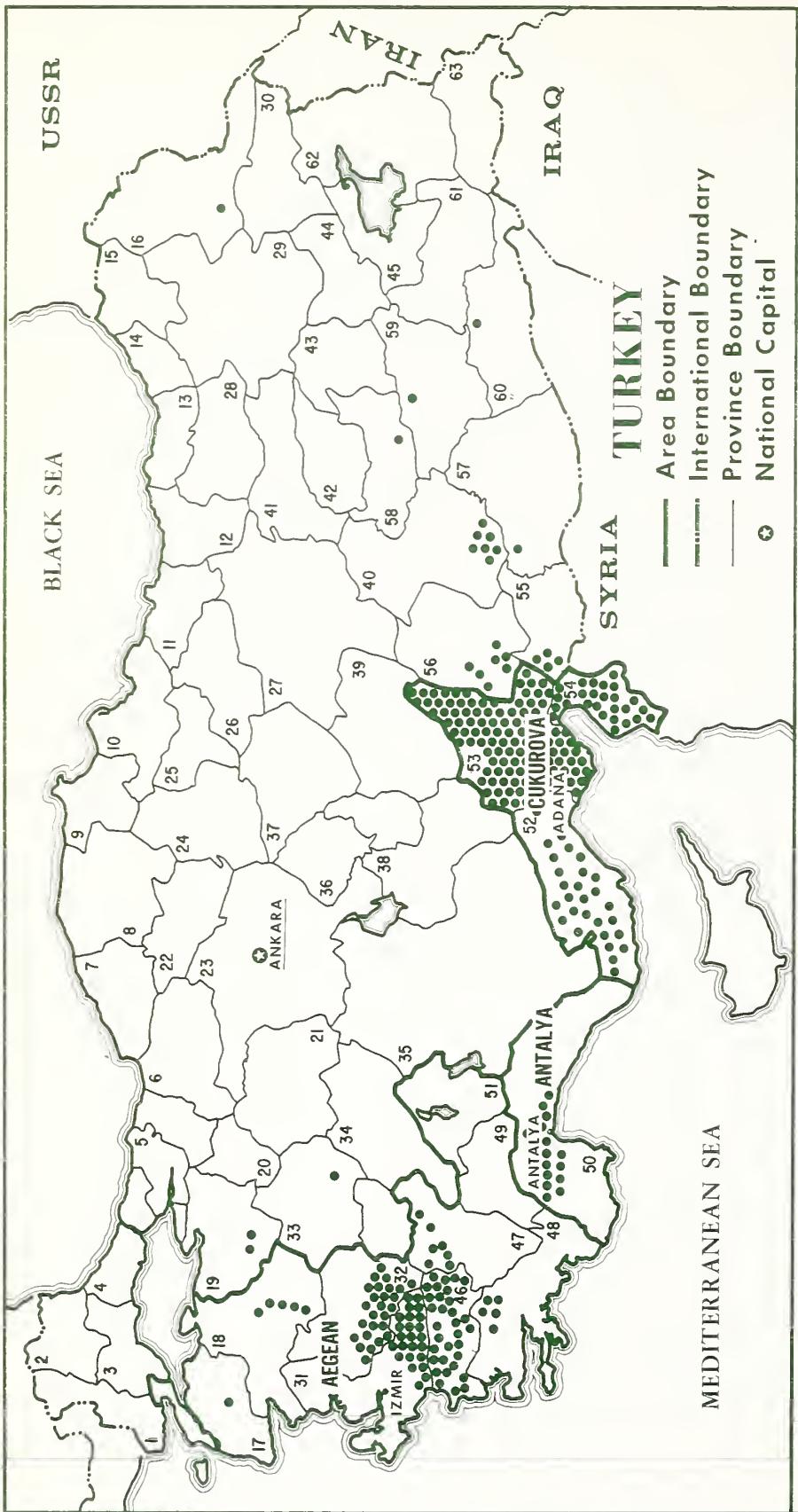
U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL LIBRARY

NOV 6 - 1966

CURRENT SERIAL RECORDS

# Cotton in TURKEY

FOREIGN AGRICULTURAL SERVICE  
U.S. DEPARTMENT OF AGRICULTURE • FAS-M-179 • SEPTEMBER 1966



## FOREWORD

Cotton plays a major role in Turkey's economy and is a leading source of foreign exchange. Turkey produces a type of fiber similar in its characteristics to most cotton grown in the United States. A recent surge in production has outstripped the more moderate rise of the past several years in domestic consumption. As a result, exports have increased sharply in a decade and competition between Turkish and U.S. cotton has intensified significantly in major world markets.

This study, based in part upon a trip by the authors to Turkey in the fall of 1965, is another in the Foreign Agricultural Service's continuing program of reporting on competitive agricultural developments in other countries. The report is intended to help persons who are interested in the U.S. cotton industry to more accurately evaluate potential competition from the Turkish cotton industry during the next few years.

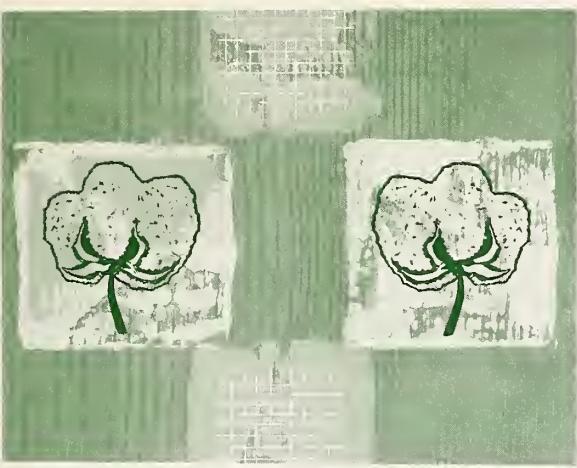
The authors wish to express appreciation to the many persons who graciously contributed to this study. This includes business and government leaders who are connected with the Turkish cotton industry, and persons on the staffs of the American Embassy in Ankara, the Consulate General in Izmir, and the Consulate in Adana. Thanks are also extended to the many informed persons in Turkey and the United States who reviewed the manuscript. The Foreign Agricultural Service extends deep appreciation to the Agricultural Research Service for permitting Dr. Lewis to assist with this study.

A handwritten signature in black ink, appearing to read "R. C. Sherman".

R. C. Sherman  
Director, Cotton Division

# CONTENTS

	Page
Raw cotton industry:	
Area, yields, production .....	3
Cotton production areas:	
Cukurova .....	4
Aegean.....	4
Other areas.....	5
Production practices:	
Mechanization .....	6
Water and drainage.....	6
Fertilizer.....	7
Pest and disease control .....	7
Financing .....	8
Policy and research .....	8
Seed distribution .....	9
Picking, marketing, ginning .....	10
Production outlook .....	12
Foreign trade:	
Raw cotton:	
Exports .....	12
Prices .....	14
Textiles:	
Imports .....	15
Exports .....	15
Outlook.....	15
Textile industry:	
Cotton consumption.....	16
Industry organization .....	16
Outlook.....	18



## Cotton in TURKEY

By Vernon L. Harness, Cotton Division, FAS, and Charles F. Lewis, Crops Research Division, ARS

During the next few years, U.S. cotton exporters can expect strong competition from Turkish growers in major world markets. Already the world's sixth largest exporter of raw cotton, Turkey has considerable potential for increased production. In the recent past, one-half to three-fourths of the total crop has been exported each year. In 1964, shipments rose to a record level of 773,000 bales (all bales are 480 lbs. net weight), compared with average exports of 462,000 bales in the previous 5 years, and a 1950-54 average of 331,000. Turkey produces varieties similar to most exported U.S. fiber, and cotton from both countries is consumed in many of the same markets.

By 1970, Turkey's cotton crop could total 1.75 million bales or more, compared with 1.5 million estimated this season. Virtually all the potential rise will probably result from higher yields, since appreciable acreage increases seem unlikely. Current acreage is estimated at 1.7 million acres.

Cotton may meet increased competition from other crops (especially if prices continue to decline in world markets) as irrigation increases in the Cukurova region. In Aegean, cotton faces no serious threat without a significant change in profit relationships.

Throughout Turkey, in recent years cotton yields have risen sharply, largely because of a shift to a higher-yielding variety. Responsible also are increased irrigation capacity and better cultural and management practices. Recently, national average yield has reached more than 400 pounds of lint per acre, compared with the 1955-59 average of 228 pounds. Further increases are in sight, especially in the Cukurova region, where yields are still relatively low.

Turkey's cotton textile industry has increased consumption considerably in recent years, though at a slower rate than the rise in cotton production. Several mills have ambitious expansion and modernization programs either under way or planned. However, the new equipment will not use cotton exclusively; a small but rising quantity of noncellulosic fibers are being blended with cotton.

In Turkey, there are two distinctive sections devoted to large-scale production of cotton textiles--the private one and the government-owned sector known as "Sumerbank." The larger private section spins mainly counts from 20's to 40's. Most mills work a rather wide range of weaves and prints. Managers in the better plants aggressively seek new domestic outlets and are quick to note shifts in customer preferences. Many feel that the domestic textile outlook warrants considerable additional mill expansion.

The second major section in Turkey's cotton textile industry, Sumerbank, is no longer the dominant factor that it was several years ago. The organization has 12 mills--9 of which spin and weave; 3 which spin only. Sumerbank concentrates on providing low-priced goods, mostly 16's to 24's, to village families.

National policy calls for encouraging textile exports, but to date shipments have been relatively small, because domestic prices are higher than export. The government has tried, with little success, to overcome this price differential by remitting part of the fees and taxes collected on exported textiles. Government efforts to increase these shipments seem likely to increase in the future. On the other hand, Turkey's domestic market appears likely to remain strong.

Table 1.--COTTON: Supply and distribution in Turkey, 1955-65<sup>1</sup>

Season <sup>1</sup>	Stocks Aug. 1	Production	Total Supply	Consumption	Destroyed	Exports
	1,000 bales <sup>2</sup>					
1955.....	65	720	785	460	3	142
1956.....	180	700	880	480	1	224
1957.....	175	600	775	500	5	130
1958.....	140	800	940	480	10	325
1959.....	125	850	975	475	1	409
1960.....	90	775	865	490	4	286
1961.....	85	950	1,035	490	2	458
1962.....	85	1,080	1,165	500	2	568
1963.....	95	1,150	1,245	530	0	587
1964.....	128	1,500	1,628	600	15	773
1965 <sup>3</sup> .....	240	1,500	1,740	625	15	950

<sup>1</sup> Beginning August 1. <sup>2</sup> 480 pounds net weight. <sup>3</sup> Partly estimated.

Source: Trade statistics of Turkey and other information.

# RAW COTTON INDUSTRY

## AREA, YIELDS, PRODUCTION

Turkey's economy rests heavily upon agriculture, which contributes two-fifths of the gross national product and employs about three-fourths of the labor force. Cotton is one of Turkey's principal crops. Besides supplying fiber for an expanding textile industry, cotton replaced tobacco in 1965 as Turkey's leading agricultural export.

Acreage remained relatively stable for many years up to World War II and for a few years thereafter. Exports were relatively small. The slight upward trend taking place in production--outcome of a modest increase in yields--was offset by rising domestic consumption.

However, in the late 1940's and early 1950's, cotton acreage rose dramatically under the influence of strong demand, domestic and export, at favorable prices. In 1950, this area encompassed over 1 million acres; a year later, more than 1.5 million acres. Since then, the acreage has fluctuated between 1.5 million and 1.7 million.

After World War II, cotton production rather closely paralleled the trend in acreage, until yields as well turned upward in the late 1950's. As a result, in 1962 Turkey pushed production above the 1-million-bale mark for the first time, and only 2 years later to 1.5 million.

Cotton yields had risen little until the late 1950's when expanded irrigation facilities and generally improved production practices began to make their influences felt. The largest single influence in recent years has been the shift to adapted high-yielding U.S. varieties. The most dramatic single year's increase in yield took place in 1964, when generally favorable weather and recent changes in varieties and practices pushed the national average to 429 pounds per acre, compared with 355 pounds a year earlier.

Table 2.--COTTON: Area, lint yields, and production in Turkey,  
1955-65<sup>1</sup>

Season <sup>1</sup>	Area	Yield	Production
			1,000 bales <sup>2</sup>
1955.....	1,547	223	720
1956.....	1,575	213	700
1957.....	1,544	187	600
1958.....	1,559	246	800
1959.....	1,542	265	850
1960.....	1,534	243	775
1961.....	1,604	284	950
1962.....	1,631	318	1,080
1963.....	1,553	355	1,150
1964.....	1,680	429	1,500
1965 <sup>3</sup> .....	1,690	426	1,500

<sup>1</sup> Beginning August 1.    <sup>2</sup> 480 pounds net.    <sup>3</sup> Preliminary.

Source: Official and trade statistics of Turkey and other information.

## COTTON PRODUCTION AREAS

Cukurova.--This is by far the largest cotton-growing area in Turkey, with nearly two-thirds of total acreage and one-half of total production. Located around the Mediterranean Sea eastward from Antalya Province and up to the Syrian border, it is comprised of the Provinces of Adana (which accounts for two-thirds of the acreage), Icel, Hatay, and Maras. Although cotton is the dominant crop throughout most of this area, large acreages are also devoted to wheat and citrus, and smaller areas to peanuts, vegetables, melons, fruits, grapes, sugarbeets, and in some locations, bananas.

Acreage in cotton has remained relatively stable in recent years; yields and production have increased sharply. However, regional yields are still considerably below the national average, primarily because cotton in more than one-half of the Cukurova is rain-grown. Reportedly, average yields on irrigated farms usually are about double those on dryland farms. Additional irrigation capacity is being developed from completion of dams and associated canals, with plans calling for a substantial rise in irrigated acreage within the next several years.

In the past, poor drainage and high soil salinity were major problems in the Cukurova; but additional drainage facilities are being developed. It is believed that with them the problems of soil salinity and waterlogging can be controlled on most land now devoted to cotton. Acreage, yield, and production from 1960 through 1965 follow:

Season	Area	Yield	Production
	1,000 <i>acres</i>	<i>Lb./</i> <i>acre</i>	<i>1,000</i> <i>bales</i>
1960.....	889	179	331
1961.....	932	227	440
1962.....	936	262	511
1963.....	915	259	493
1964.....	985	343	703
1965.....	1,028	374	800

Soils are fairly heavy near the sea, generally lighter further inland. Around Adana, summers are hot and dry with low humidity; around Mersin, the growing season is dry but somewhat cooler. Virtually no rain falls during the growing season throughout the Cukurova area and water stress is clearly evident in nonirrigated fields. This probably accounts for the slightly shorter fiber from this area, compared with that of others.

In the Cukurova, cotton is generally produced on relatively large holdings. Farms up to several hundred acres are common, and some others occupy several thousand acres. Much of the cotton is produced under owner-operator arrangements. Hired laborers are utilized in periods of heavy workloads, and sufficient employees are sometimes difficult to obtain. Sharecropper arrangements are used on some of the larger farms.

As in most areas in Turkey, few farmers follow a rotation system. Nearly all land preparation has been mechanized, but in later stages of cultivation, mechanization has been made more difficult by irrigation and row spacing methods now in use. Picking which usually begins in August, is handled with transient laborers as well as local ones.

Aegean.--The Aegean area, located in the nation's southwest, is the second most important in terms of cotton area. In some recent years, production here has topped output from Cukurova. Recently, this area has accounted for nearly one-third of Turkey's total cotton acreage and more than one-third production. Aydin, Izmir, and Manisa provide more than three-fourths

of Aegean cotton acreage and production; Denizli, Mugla, Balikesir, Bursa, and Canakkale, the remainder.

As in most of Turkey, cotton acreage in the Aegean area has not changed substantially for some time, but yields and production have both increased. Most cotton here is produced under irrigation. However, yields tend to fluctuate more than might be expected, because of highly variable weather conditions, with cool, wet springs that often delay land preparation and planting, and quantity of water and method of application all causing considerable yield variation.

Additional production problems include occasional lowering by rains of the crops quality at harvest time in September and October, and frequent scarcity of labor for picking.

Cotton acreage, yield, and production from 1960 through 1965 follow:

Season	Area	Yield	Production
	1,000 acres	Lb./ acre	1,000 bales
1960.....	450	378	354
1961.....	476	407	404
1962.....	494	422	434
1963.....	491	552	565
1964.....	540	578	650
1965.....	491	528	540

In general, the Aegean area is a diversified farming region in which cotton has become firmly established. As a major crop in this area, cotton shares use of the land with tobacco, olives, wheat, figs, grapes and vegetables. Small acreages of citrus are scattered, also, in parts of the area where soil, water, and climate make production possible.

Little rain falls during the cotton growing season. In some parts of the area, irrigation water is taken from rivers and streams by large pumps owned by individual farmers. A few dams have been constructed. Also, some farmers divert water from streams by utilizing more primitive methods.

Farms tend to be much smaller than in the Cukurova, with holdings generally well under 100 acres, and farms of only a few acres common. As in other parts of Turkey, fragmentation of holdings is a problem. The owner-operator and his family usually supply most of the labor, except during harvest. For the most part, cotton is grown on relatively deep alluvial soils.

Other areas.--Cotton is grown on small acreages in several other areas of Turkey, under conditions ranging from extremely primitive to fairly modern. The largest single such area is the Province of Antalya, where about one-half of the remaining cotton is grown. Cotton acreage, yield, and production from 1960 through 1965 follow:

Season	Area	Yield	Production
	1,000 acres	Lb./ acre	1,000 bales
1960.....	74	246	38
1961.....	72	260	39
1962.....	72	320	48
1963.....	72	300	45
1964.....	73	605	92
1965.....	79	723	119

The Antalya region is on the Mediterranean between the Aegean and Cukurova areas. Average annual rainfall exceeds 40 inches, and the cotton growing season is hot and relatively humid. Cotton can be grown without irrigation; but supplemental irrigation is applied on most of the crop. Yields have increased sharply and are now the highest in Turkey.

For the most part, soils here are alluvial--relatively heavy near the sea and lighter inland. Cotton is produced on a comparatively small portion of the cropland. Competing crops include citrus and other fruits, vegetables, berries, and rice. In past years, insects have taken a heavy toll of cotton in Antalya. Recently, control has been, in general, adequate.

## PRODUCTION PRACTICES

Mechanization.--Cotton production has helped to introduce a commercial concept into otherwise basic subsistence farming in Turkey's village-economy agriculture. Cotton is produced under methods that range from primitive to relatively advanced. For the most part, however, machinery has replaced animal power in preparation of land for planting. Generally, the remaining operations are performed by hand or with animal power. Large-scale farming in some parts of Turkey, the spread of agricultural education to farm operators, and two decades of highly profitable returns from cotton production have all contributed to the adoption of many advanced cultural methods. Also, a shortage of labor in some regions has speeded the shift to mechanization.

Nevertheless, certain cultural practices inhibit a rapid shift to more complete mechanization. Most cotton lands are relatively level, but virtually no fields are naturally sloped for large-scale row irrigation. Little land leveling has been done, and most leveling equipment is of primitive design. Because of the uneven land, cotton is basin-irrigated in most places. Sometime after the land has been prepared, but before the first water has been applied, low dikes are thrown up throughout the field. The dikes surround plots ranging from perhaps 10 yards square to areas several times larger. Irrigation water is pumped to the highest point, from which each successively-lower plot is flooded. Despite smallness of the basins flooded, cotton in low spots suffers from excess of water while plants on high spots fail to receive enough. In addition to causing inefficient use of water, the basin irrigation of small plots prevents the use of mechanized equipment for cultivation or for harvesting.

Narrow row spacing is another impediment to the use of cotton machinery in Turkey. Rows in most fields are only about two feet apart. In planting, seed is generally hand-dropped at a rate at least twice as heavy as is common in the United States. Later, the plants are thinned to a stand somewhat thicker than is common in this country. The thick stand on the narrow rows results in plant populations substantially in excess of average populations in the United States. However, the height of Turkish cotton tends to be somewhat shorter than that of irrigated plants in this country. Weeds are a serious problem in many fields.

Water and drainage.--About one-half of Turkey's cotton acreage is irrigated. Most of the rain-grown cotton is in the Cukurova area. About one-half of the water is pumped out of streams, rivers, or relatively shallow wells by individual farmers, while the remainder is obtained from government canals. The government makes a flat charge per acre for irrigation water. This rate changes from year to year and differs for each crop. Water costs are higher for vegetable farming than for sugarbeet and cotton growing. Government specialists advise farmers on the use of water.

Irrigation capacity is being increased, especially in the Cukurova. Within five years, nearly three-fourths of Turkey's cotton acreage will be irrigated, it is expected. For many

years, expansion of irrigation capacity ran far ahead of needed drainage, with the result that soil salinity became a serious problem in some areas. More recently, drainage facilities have been expanded so that salinity has not increased noticeably. Now irrigation projects have been coupled with drainage work.

Fertilizer.--Contrasted with the situation of only a few years ago, a major part of the cotton on irrigated land now receives some fertilizer. For the most part, rates of application are relatively low; research shows that substantially heavier applications, especially of nitrogen, would be profitable. Most commercial fertilizer is imported by the Ministry of Agriculture. Relatively small quantities of higher-priced fertilizers are produced domestically. The imported fertilizer is resold to farmers at prices equal to the higher-priced local product. Additional production of domestic fertilizer is expected within the next few years, although Turkey is likely to need large imports for the foreseeable future.

Pest and disease control.--In Turkey, cotton is attacked by all of the major cotton insects except the boll weevil and the jassid. The bollworms, both pink and common, are probably

Less than half of Cukurova region's cotton acreage is irrigated, but more will be added with the completion of projects like the system near Adana, pictured here. At right are diversion locks nearly completed; bottom left is a major canal that carries water from lake and right, open concrete pipe used to move water to fields from diversion locks.



most destructive. Generally, insect control has been adequate. All insecticides are imported, mostly from European sources.

Farmers have access to a wide range of insect controls, including systemics. Reportedly, farmers control insects on most irrigated land, but relatively little raingrown cotton receives protection. Specialists within the Ministry of Agriculture recommend to the farmer what poison to apply and when. Insecticides salesmen also advise the farmers. Most insecticides are applied with hand or tractor equipment.

Other methods of control include heat-sterilization of planting seed. Also, farmers are encouraged to destroy cotton stalks after harvest; however, a common practice is to let animals graze after cotton is picked and to use stalks for winter fuel.

Although pest damage has been held to a minimum in most seasons, insects will surely become more difficult to control in the future. The need for greater use of control measures will become necessary when insects develop resistance to the insecticides used and when the population of beneficial insects has been reduced. The most serious disease problem in Turkey, though still relatively minor in most areas, is wilt. Evidence has convinced most officials that the wilt is caused by Verticillium.

## FINANCING

Agricultural credit is obtained from a number of sources, principally the agricultural banks and cooperatives. The agricultural banks lend money for a variety of short-term and long-term needs at an annual rate of about 6 percent. Agricultural credit cooperatives provide capital for the purchase of planting seed, fertilizer, insecticides, machinery, and for the improvement and purchase of land. While availability of credit from cooperatives and banks has increased considerably in recent years, many farmers find it necessary to borrow money from local lenders at relatively high interest rates. Merchants also provide credit.

## POLICY AND RESEARCH

Government agricultural policies are incorporated into an overall 5-year plan that began in 1963. The main points under this plan are to raise production both to meet higher domestic demand and also to expand exports under a relatively free market structure. These objectives are to be gained by an expansion of agricultural education, training, and research; by introduction of improved farming techniques; by standardization of farm products; by greater use of irrigation, fertilizer, and pesticides; by the encouragement of more owner-operator farming units; and by other means.

While these policies are directed toward agriculture in general, the Turkish Government aids the raw cotton industry, specifically, through agencies within the Ministry of Agriculture and the Ministry of Commerce.

The Ministry of Agriculture has many functions related to cotton. The Cotton Department renders technical assistance to producers and conducts demonstrations for them, as well as handling research on cotton improvement. The Agricultural Combat and Quarantine Administration aids cotton producers in controlling insects and disease, while the Soil and Water Administration manages national irrigation projects. Farm level education is handled by the General

Direktorate of Agriculture. Seed and machinery are supplied in part by the Agricultural Machinery and Implements Corporation (and in part by private companies). Several large national farms produce certified planting seed for distribution to farmers.

In the Ministry of Commerce, the Standards Department establishes legal standards for baled cotton and enforces compliance with the regulations. The Department of Foreign Trade adopts policies on exports, and compiles and distributes foreign market information.

Under directions of the Ministry of Agriculture, research on cotton problems is carried on in all of the major cotton areas and some minor ones. This involves intensive work in cotton breeding, selection, and multiplication, with apparently less attention to work on cultural practices, water use, and mechanization. Considerable fiber testing equipment is available for the determination of various quality factors in lint, even though these factors are for the most part disregarded in domestic commercial transactions.

## SEED DISTRIBUTION

Virtually all of Turkey's cotton area is now planted to American Upland varieties. About two-thirds of the crop is Coker 100A, while practically all of the remainder is DPL 15-21, a local selection out of Deltapine 15. These two varieties replaced a local Acala that had been selected out of the U.S. variety many years ago, and a short, harsh Asiatic variety (Yerli).

Experiment stations engaged in cotton research have capable agronomists and breeders. Their most successful practice has been to introduce varieties from the United States as well as from other parts of the world, by conducting performance tests and propagating varieties most suitable for Turkey. Breeders then make selections locally in order to adapt these still further to Turkish conditions.

Reportedly, some of Turkey's larger farmers demanded new varieties a few years ago, after observing increased yields being obtained in Syria from an improved U.S. variety. Accordingly, the Turkish Ministry of Agriculture purchased certified seed of this same variety, Coker 100A, in the United States. The seed increase program was carried out by multiplying the stock seed for two successive years on selected farms and then releasing it to other cotton farmers. This same multiplication method has also been followed for DPL 15-21. Probably no more Coker 100A seed will be purchased in the United States. A selection called Coker 100A2 has been introduced into the multiplication system. The newer improved varieties brought increased yields and profits to the farmers, while at the same time causing little decline in staple length or strength in the shiftover from Acala, according to Turkish specialists.

Turkish farmers and officials are nevertheless aware of some problems. These present varieties show less tolerance to Verticillium Wilt, and are also disliked by many pickers because the bolls tend to be somewhat smaller and tighter than those of the older varieties. The harvest problem in labor-short areas has been compounded further because the newer varieties tend to open within a shorter span of time.

Some mill men are not entirely satisfied with the fiber from the present varieties. The available fiber is quite satisfactory for the bulk of Turkey's spinning requirements. However, longer and especially stronger fiber is needed by the advanced mills that are spinning higher counts on faster machines, adding new finishes, and blending cotton and manmade fibers. Pressure is growing to encourage the production of small quantities of a longer, stronger variety such as Sealand. However, in the past, yields from Sealand were too low to be profitable.

## PICKING, MARKETING, GINNING

All Turkish cotton is hand-picked. The cotton is gathered in small bags and occasionally baskets, which are then emptied into large bags that hold perhaps 200 pounds to 300 pounds. Local and itinerant labor is employed. The migratory workers camp in tents near the fields where they are working, and follow the harvest about the country. The large bags filled with seed cotton are for the most part transported by trailers pulled to gins by farm tractors. Trucks, and sometimes animal-drawn equipment, are also used.

Roller gins are used for more than three-fourths of Turkey's cotton. Although saw gins are gaining in popularity, their adoption has been slowed by lack of trained personnel and relatively high cost of imported machinery. Roller-gin equipment, by contrast, is now manufactured in Turkey.

Mill men and exporters have mixed opinions concerning the merits of saw-ginned cotton versus roller. Some mill men prefer saw-ginned fiber because it is cleaner, while others choose roller-ginned cotton because the fiber shows less damage. Generally, exporters want to maintain their market for roller-ginned fiber; although price discounts over comparable saw-ginned qualities are sometimes needed to make sales. These discounts reflect the higher trash content of the roller-ginned cotton.

In 1961--latest date of official statistics--there were 718 private roller gins with 6,114 stands in Turkey, and 30 private saw gins with 118 stands. The state owned 1 saw gin and 5 roller gins. Since 1961, there has been a considerable buildup in roller-gin equipment; also, several high-capacity saw gins have been installed. Despite the increased gin capacity, the recent rapid rise in production has caused a critical shortage of seed-cotton storage at the harvest's peak. A national law requires that ginning must be completed by the end of March each year, but small quantities of pressing continue through the season. Some ginning establishments have no pressing equipment, and pressing facilities in other gins must be used.

To get a more uniform package, the Turkish Standards Institute has set up specifications for roller-ginned bales of a standard weight and size. These new specifications must be met by the 1967-68 season. In many gins, new higher-density presses will be required in order to comply with the packaging requirement. Gross weight of the new bales will be between 190 and 200 kilograms (419 - 441 pounds). The jute covering and 4 ties weigh about 4.5 kilograms (10 pounds). Dimensions of the bale are, in centimeters, 65 x 95 x 105 (in inches, about 26 x 37 x 41).

Some of the more prominent cotton producers have their cotton custom-ginned, but most of Turkey's cotton is sold unginned. The seed cotton is delivered to the gin yard, where it is sorted into 2 or 3 grades and stored with other cotton of the same quality. (These unginned cotton grades are determined on the basis of color and foreign matter.) Usually, the farmer sells his cotton to the gin, though some farmers sell all or a part to other buyers, and still other producers retain their lint, either after pressing or else unpressed after ginning.

The Ministry of Commerce is responsible for the classification of ginned cotton into grades which take into account color, foreign matter, and preparation. Since the seed cotton is sorted before ginning into lots of the same quality, the classers do not believe it is necessary to class each bale of cotton. Rather large samples are drawn from 5 to 20 percent of the bales, from what is thought to be an even-running lot, and the classification of the whole lot is based on the

All Turkish cotton is hand picked, and most is sold unginned; it goes to gins in bags. Below, one of the authors, Dr. Lewis, inspects plants near Aydin, Aegean region. Right top, trailers line up at gin near Iskenderun, Cukurova region, and bottom, seed cotton is stored in warehouse at a gin near Adana.



results of the subsample. Upland cotton in Turkey is classed into seven categories of white (Standard Extra and Standard 1 through 6) and five of slightly spotted (Standard H.B. 1 through 5). Cotton of a lower quality is called champagne. The subdivisions follow:

White		Slightly spotted	
Standard	Extra	Standard	H.B. 1
"	1	"	" 2
"	2	"	" 3
"	3	"	" 4
"	4	"	" 5
"	5		
"	6		

Although no consideration is given to staple length in the official grading system, many exporters and some domestic mills determine the staple of at least a few bales from each lot.

Cotton from the Aegean and Antalya areas yield staples from 1 inch to 1-3/32 inches, inclusive; while lengths run about 1/32 inch shorter in the Cukurova area.

Much of Turkey's cotton is marketed through exchanges, though sizable quantities move from cooperative gins into export markets and small quantities bypass the exchanges on the way from gins to domestic mills. In addition, small quantities of unginned cotton are used in nonmill uses and some cotton that is ginned but not baled is consumed in domestic mills.

## PRODUCTION OUTLOOK

Turkey has considerable potential for increased cotton production during the next several years. Under continued favorable market conditions, a crop of at least one and three-fourths million bales would be likely. The new total would be considerably larger than the 1.5 million bales grown in 1964-65 and 1965-66. All will come from higher yields, if, as seems likely, cotton acreage remains about the same.

While the increase would be relatively easy to achieve with increased availability of irrigation and drainage, and with improved cultural practices, a shift in the profit relationship with competing crops could slow down the rise in cotton production. Certainly, cotton may meet increased competition if cotton prices decline markedly in world markets and domestic.

Indications are that, even at present prices, competition in the Cukurova area will increase from citrus, tropical fruits, vegetables, and possibly sugarbeets as irrigation facilities are expanded. In other major cotton producing regions, cotton probably faces no serious threat without a significant change in profit relationships.

## FOREIGN TRADE

### RAW COTTON

Exports.--Cotton is a major agricultural source of foreign exchange and Turkish cotton is a major competitor in world cotton import markets, with Turkey now ranking sixth among world cotton exporter, and first among Asian (excluding USSR). In recent years, between one-half and two-thirds of Turkey's cotton has moved into export markets.

In prewar years, domestic requirements held down exports, and shipments did not exceed 100,000 bales annually till the late 1940's. Shipments reached a record 773,000 bales in 1964, compared with 587,000 a year earlier, and 246,000 in the 1955-59 period. Preliminary data indicate that 1965-66 exports may total about 950,000 bales. A large portion of Turkey's cotton exports move to markets in Western Europe--where one-third of U.S. exports have moved in recent years. Turkey's largest markets include the United Kingdom, Portugal, West Germany, Italy, Belgium, and France. Shipments to Communist countries--although the share of the total is still under 10 percent--have more than doubled in the past few years.

Turkish cotton leaders are keenly aware of the role of cotton exports in the country's economy, and considerable encouragement has been given to maintaining a high level of shipments. At the present time, some officials feel that more foreign exchange could be earned if additional textiles were shipped rather than more raw cotton. Nevertheless, an announcement from the Ministry of Commerce in July, 1964, dealt as its main objective, with policy to aid raw cotton exports. Under the new policy, cotton was removed from the list of commodities that were subject to prior export registration and that had minimum export prices.

Table 3.--COTTON: Exports from Turkey by country of destination, averages 1950-54 and 1955-59, annual 1960-64<sup>1</sup>

Destination	Averages		1960	1961	1962	1963	1964
	1950-54	1955-59					
	1,000 bales <sup>2</sup>						
United Kingdom .....	9	29	22	43	113	141	160
Portugal.....	0	0	0	11	23	66	96
Germany, West .....	99	50	74	103	111	79	84
Italy .....	48	75	96	157	139	116	76
Belgium <sup>3</sup> .....	3	10	35	76	60	54	74
France .....	53	42	8	11	25	25	50
Switzerland.....	2	2	7	14	22	26	40
Lebanon.....	3	1	8	1	5	17	27
Greece .....	0	0	0	0	1	1	27
Poland .....	10	(4)	3	4	8	6	20
Spain.....	2	(4)	0	0	(4)	1	15
Taiwan.....	0	0	0	0	0	0	13
Yugoslavia.....	19	2	2	5	6	4	12
Hungary.....	17	3	10	3	6	5	11
Other countries .....	66	32	21	30	49	46	68
Total .....	331	246	286	458	568	587	773

<sup>1</sup> Seasons beginning August 1.   <sup>2</sup> 480 pounds net.   <sup>3</sup> Including Luxembourg.   <sup>4</sup> Less than 500 bales.

Source: Statistique Mensuelle du Commerce Exterieur (Turkey) and other information.

In recent years, private firms have handled about three-fourths of Turkey's cotton exports. Private exporters purchase most of their cotton through the exchanges. As transactions are on the basis of grade only, many exporters staple a part of each lot to more adequately describe export offerings. In addition to overseas markets, private export firms also sell cotton to domestic textile mills.

The other one-fourth of the nation's cotton exports are handled by three cooperative unions. These are made up of 73 cooperatives that buy, gin, and resell member's cotton. The largest union, Taris, encompasses 50 member cooperatives with a total enrollment of about 21,000 cotton farmers. In all, nearly 35,000 cotton growers belong to cooperatives within the 3 unions of Taris, Cukobirlik, and Antbirlik. Taris operates in the Aegean area, Cukobirlik is centered in the Cukurova, and Antbirlik is active in Antalya. These sell considerable cotton to domestic textile mills, but most is sold abroad. Sometimes union cotton is withheld from the market in an effort to bolster prices.

Prices.--Prices in international cotton import markets play a vital part in determining the exchange and producer prices of cotton in Turkey. At the beginning of each harvesting season, the cooperative unions announce purchase prices for members' cotton. Other cotton buyers consider these prices carefully in their own operations.

Quotations for better quality Turkish cotton have been relatively favorable for many years, although these quotations have drifted lower, along with other growths. Izmir cotton has been closely competitive with similar U.S. cotton for several years. In addition, Izmir fiber commands a premium over Adana cotton in both domestic and export markets.

Table 4.--COTTON: C.i.f. offering price quotations<sup>1</sup> for Turkish and equivalent U.S. qualities, Liverpool, England, annual 1960-63, and monthly August 1964-December 1965

Year <sup>2</sup> and month	Turkish	U.S. equiv.	Turkish	U.S. equiv.
	Adana Standard I	S.M. 1 <sup>1/3</sup>	Izmir Standard I	S.M. 1-1/16 <sup>1/4</sup>
	Cents per lb.	Cents per lb.	Cents per lb.	Cents per lb.
1960.....	28.21	28.58	30.72	29.94
1961.....	28.24	29.29	30.58	30.32
1962.....	26.86	28.23	29.69	29.40
1963.....	27.01	27.06	29.57	28.75
1964:				
August.....	26.24	27.50	29.30	29.30
September.....	26.16	27.49	29.32	29.23
October .....	26.21	27.52	30.36	29.30
November .....	26.56	27.58	30.16	29.38
December .....	26.65	27.78	29.92	29.58
January.....	26.55	27.92	29.79	29.66
February .....	26.64	28.03	29.98	29.70
March.....	26.42	28.06	29.80	29.69
April.....	26.84	28.13	29.78	29.77
May.....	26.98	28.18	30.01	29.81
June.....	26.94	27.94	29.96	29.60
July .....	26.15	27.11	29.33	28.85
1965:				
August.....	25.96	27.10	29.35	28.84
September.....	25.76	27.16	29.31	28.90
October .....	25.63	27.22	28.99	28.97
November .....	25.62	27.22	28.54	28.98
December .....	25.29	27.20	28.64	28.95

<sup>1</sup> Quotations for prompt shipment when available; otherwise shipped within 3 months.

<sup>2</sup> Year beginning August 1.   <sup>3</sup> S.M. 31/32 prior to February 1964.   <sup>4</sup> S.M. 1-1/32 prior to February 1964.

Source: Liverpool Cotton Services, Limited, Liverpool, England.

## TEXTILES

Imports.--Until recent years, Turkey imported relatively small quantities of cotton yarn and textiles to supplement local production. Because of improvement in the domestic textile industry, which has resulted in higher-quality goods, and government regulation of imports, imports of cotton goods now are negligible.

On the other hand, the influx of manmade yarn and fabric has steadily increased. However, these manmade fiber imports make up a small part of the total. Major suppliers of manmade yarn (cellulosic and noncellulosic) include: Greece, Israel, Italy, Spain, United Kingdom, United States and West Germany. Manmade fabrics come mainly from France, Italy, and West Germany. As in most countries, noncellulosic imports are rising faster than cellulosic.

Exports.--Turkey's exports of cotton yarn and fabric were negligible before 1960. That year, Turkey shipped 19 million square yards of fabric; and about 9 million yards in each of the next two years. Shipments were sharply higher in 1963 and reached a record of about 25 million square yards in 1965. Major destinations for Turkish cotton textiles have included the United States, the United Kingdom, West Germany, Cyprus, and Tunisia.

In December 1963, the Turkish Government announced several regulations intended to promote increased exports of textiles. In summary, exporters of textiles were to receive refunds for various taxes, duties, and fees. However, the committee charged with determining refunds has experienced considerable difficulty in carrying out terms of the announcement. While some increase in textile exports has taken place, some government officials have expressed disappointment with the overall results. Despite the special incentives, most private textile mills find domestic markets more profitable than export markets.

Turkey and the United States announced in July 1964 a bilateral agreement covering Turkey's exports of cotton textiles to the United States. The agreement, reached in accordance with provisions of the Long-Term Cotton Textile Arrangement (made under GATT), extends over a 3-year period that began July 1, 1964. In addition to a one-time-only allowance of 1.1 million square yards, overall ceilings for the first year totaled 2.75 million square yards. Each year of the agreement, ceilings will be increased 5 percent over those of the preceding period.

## OUTLOOK

Exports of Turkish raw cotton can be expected to rise moderately over the next few years if present indications of increased production hold. Probably, Turkey will continue to ship out nearly all exportable supplies each season, with near-minimum carryover from one season to the next. From the importing countries' viewpoint, Turkey is well-established as a source of relatively high-quality cotton at competitive prices. From Turkey's viewpoint, cotton leaders look favorably upon exports as a major source of foreign exchange and impediments are not likely. However, cotton exports probably will not match the increased production because domestic consumption is expected to rise.

Official policies and regulations will be the major factor in determining the success of the program to increase exports of cotton textiles. Shipments have risen in just a few years, from virtually nothing to about 25 million square yards; nevertheless most textile manufacturers find higher domestic prices more attractive than lower foreign prices. However, the government is keenly interested in raising textile exports, and doubtless there will be a serious effort to make a higher level of shipments more attractive. Imports into Turkey are subject to rigid exchange controls and licensing requirements, and it is likely that imports of textiles will be held to the bare minimum needed to complement domestic production.

# TEXTILE INDUSTRY

## COTTON CONSUMPTION

Turkey has one of the oldest commercial textile industries in Western Asia, with several mills now in operation that predate the turn of the present century. Cotton consumption has moved irregularly upward during most of the industry's existence. A sharp expansion took place in the 1930's, after construction of a number of mills by USSR and European technicians but the largest rise has occurred since World War II.

Including small amounts of nonmill consumption, Turkey used about 200,000 bales annually in the years immediately following World War II. In 1951-52, textile activity turned sharply upward as a result of the strong demand associated with the outbreak of hostilities in Korea and a relative shortage of raw cotton in several major consuming countries. In Turkey, a major expansion in domestic cotton production accompanied the buildup in raw cotton requirements and the increase in textile capacity. This upward trend in cotton consumption has continued, and total domestic use in 1965-66 totaled an estimated 625,000 bales.

Cotton is the dominant textile fiber used by the Turkish population, wool second. Use of manmade fibers, especially noncellulosics, has risen sharply in recent years. Turkey's per capita consumption of all fibers totaled 11.2 pounds in 1963, according to the Food and Agricultural Organization of the United Nations. Of the total, cotton accounted for 8.2 pounds, wool 2 pounds, and total manmade fibers 1 pound.

## INDUSTRY ORGANIZATION

Turkey's textile industry is a mixture of commercial enterprises--both private and government--and a relatively minor hand-loom section. After the Turkish Republic's establishment in 1923, most of the textile mills were nationalized. It was in 1933 that the federal organization, Sumerbank, was set up to operate the government-owned facilities; for many years, Sumerbank was dominant in Turkey's textile industry. After World War II, the private sector was revived, and in 1950 and 1954 gained additional momentum from laws that encouraged private investment. Spindles and looms in place on December 31 of each year, from 1959 through 1965, were:

<u>Year</u>	<u>1,000 spindles</u>	<u>1,000 looms</u>
1959.....	793	15
1960.....	793	16
1961.....	780	18
1962.....	812	19
1963.....	838	20
1964.....	841	20
1965.....	901	21

The Sumerbank no longer has the dominant position that it once held in Turkey's textile industry. While the private sector was expanding and modernizing, Sumerbank capacity underwent only a slight expansion. Present Sumerbank plans call for modernization of existing plants, but little increase in capacity.

Sumerbank's textile output is comprised mostly of low-priced goods. Retail outlets are operated in nearly every village and town in the nation. Finished Sumerbank textiles are also distributed through private wholesalers and retailers. The organization now operates 12 cotton mills--nine both spin and weave, while three spin only. Production is centered mostly in counts from 16's to 24's in Sumerbank mills. No blending with manmade fibers is done, and none of the newer finishing processes is used. Sumerbank finds domestic cotton quite satisfactory for mill requirements.

In 1962, less than one-third of the nation's total cotton yarn and fabric production and capacity was accounted for by Sumerbank. In addition to the 12 Sumerbank mills, Sumerbank and private interests are joint owners of several plants. Sumerbank's enterprises also include operation of several cotton gins, as well as non-cotton activities.

Use of manmade fibers is becoming increasingly important in Turkey's textile industry, although a major part of present requirements are imported. Sumerbank operates the country's only rayon plant; private interests established a nylon plant in 1964. Reportedly, more than one-half of the private plant's output will be tire cord.

After trailing Sumerbank for many years, the private sector of Turkey's textile industry has moved to the fore. More than two-thirds of textile production and capacity were in this sector in 1962. For the most part, the private sector spins counts from 20's to 40's, in a wide range of fabric descriptions. Mounting interest in the newer cotton finishes is being shown by several of the private mills, but most attention on new developments is now centered on blends of cotton and noncellulosic fibers. At present, blending is done on a limited scale in only a few mills. As blending increases and as higher counts are being spun on faster equipment, management of many textile mills are becoming dissatisfied with domestic cotton's performance for a number of end-uses. The slightly longer cotton from Izmir commands a premium over Adana fiber, and pressure for longer, stronger fiber is evident. Most mills in Turkey are located in cotton producing areas, and many mills grow and gin a portion of their requirements.

Table 5.--COTTON YARN AND FABRIC: Production in Turkey during specified years<sup>1</sup>

Year <sup>1</sup>	Yarn			Fabric		
	State	Private	Total	State	Private	Total
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. sq. yd.	Mil. sq. yd.	Mil. sq. yd.
1940.....	21.1	40.3	61.4	56.2	( <sup>2</sup> )	( <sup>2</sup> )
1945.....	23.5	38.4	61.9	81.3	( <sup>2</sup> )	( <sup>2</sup> )
1950.....	36.6	29.7	66.3	120.8	35.2	156.0
1955.....	56.9	80.9	137.8	174.7	206.8	381.5
1960.....	60.8	143.8	204.6	183.5	446.9	630.4
1962.....	62.0	145.5	207.5	189.2	448.5	637.7
1963.....	63.5	148.8	212.3	192.1	458.1	650.2
1964.....	65.7	150.1	215.8	204.2	476.1	680.3
1965.....	70.7	( <sup>2</sup> )	( <sup>2</sup> )	218.0	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Year beginning January 1.      <sup>2</sup> Not available.

Source: Various official reports.

## OUTLOOK

It appears certain that Turkey will increase cotton consumption considerably over the next several years, although the rate of increase probably will fall short of the rise in raw cotton production. At present, most mills are operating at capacity or near it, but considerable expansion and modernization is being planned or is under way.

A report released early in 1966 by Turkey's State Planning Office indicated that by 1970 the nation's cotton spinning capacity might be increased by at least 15 percent. However, cotton alone will not be used on all of the new equipment. Use of manmade fibers, especially non-cellulosics, is supplying a still small, but nevertheless rapidly rising, portion of the overall textile market.

Much of the increased cotton consumption probably will come in private mills. Managers in many private mills are aggressively seeking new domestic outlets, while Sumerbank seems content to maintain traditional domestic markets. Sumerbank probably will continue to find present domestic raw cotton satisfactory for mill requirements, while private mills may find it necessary to push harder for cotton more suitable for the new demands that are being placed on the fiber.

Although present laws prohibit such imports, moderate quantities both of shorter and longer cotton would be useful for achieving a better balance with the domestic crop for mill use.



UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C. 20250

POSTAGE AND FEES PAID  
U. S. DEPARTMENT OF AGRICULTURE

Official Business

NOTICE

If you no longer need this publication,  
check here  return this sheet,  
and your name will be dropped from the  
mailing list.

If your address should be changed, print  
or type the new address on this sheet  
and return the whole sheet to:

Foreign Agricultural Service, Rm. 5918  
U.S. Department of Agriculture,  
Washington, D.C. 20250.